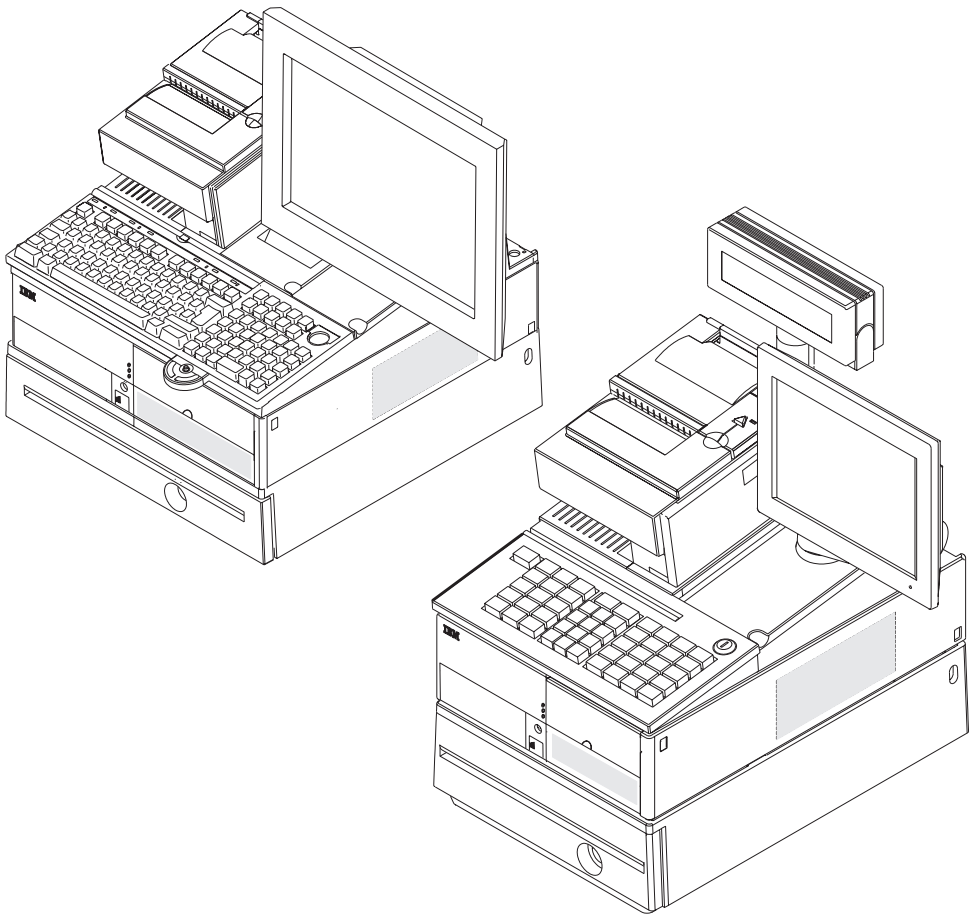
SurePOS 700 Series

SurePOS 700-723/743/783 Operating System Installation Guide



GA27-5002-01

SurePOS 700 Series

SurePOS 700-723/743/783 Operating System Installation Guide

GA27-5002-01

Note

Before using this information and the product it supports, be sure to read the general information under Appendix A, “Safety information,” on page 27 and Appendix B, “Notices,” on page 33.

October 2008

This edition applies to the Models 723, 743, C43, and 783.

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About this guide

Who should read this guide

This guide is intended for the person who will install the operating environment for the IBM® SurePOS™ Models 723, 743, C43, and 783.

How this guide is organized

This guide is organized as follows:

- Chapter 1, “Preparing for the installation,” on page 1 describes what is needed before you begin your installation.
- Installation procedures are described in these sections:
  - Chapter 2, “Installing Windows 2000,” on page 7
  - Chapter 3, “Installing Windows XP,” on page 11
  - Chapter 4, “Installing system drivers on Windows OS,” on page 13
  - Chapter 5, “Installing PC DOS 2000,” on page 15

Related publications

These IBM publications are also available from the IBM Retail Store Solutions Web site at http://www.ibm.com/solutions/retail/store/support.

- *Safety Information – Read This First*, GA27-4004
- *SurePOS 700 Series: SurePOS 700-723/743/783 Systems, Installation, and Operations Guide*, GA27-4998
- *SurePOS 700 Series: SurePOS 700-723/743/783 Hardware Service Guide*, GY27-0424
- *Point of Sale: Options and I/O Devices Service Guide*, GC30-9737
- *4610 SureMark Printers: User’s Guide*, GA27-4151
- *4610 SureMark Printers: Hardware Service Guide*, GY27-0355
- *Point of Sale Subsystem: Programming Reference and User’s Guide*, SC30-3560
- *Point of Sale Subsystem: Installation, Operation and Keyboards*, GC30-3623
- *4820 SurePoint Solution: Installation and Service Guide*, GA27-4231
- *4820 SurePoint Solution: System Reference*, SA27-4249

Diagnostic programs that are media independent are downloadable from the IBM Retail Store Solutions Web site at http://www.ibm.com/solutions/retail/store/support. The use of generic drivers from manufacturer web sites is not recommended.

Locating the IBM SurePOS 700 support web site

Throughout this document, you are referred to go to the IBM Retail Store Solutions Web site at http://www.ibm.com/solutions/retail/store/support. On this web site, click **IBM SurePOS 700 Series** to open the support information available for the IBM SurePOS 700.

Publications accessibility

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Between major revisions of this document, there might be minor technical updates. The latest version of this document is available on the Retail Store Solutions Web site at www.ibm.com/solutions/retail/store/support/publications/.

Summary of changes

October 2008

The following changes have been made to the second edition of the Operating System Installation Guide:

- Graphics have been added.
- Descriptions have been added to tables.
- Instructions have been added.

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Chapter 1. Preparing for the installation

This section provides information and required procedures to prepare for your installation.

Important driver information

The IBM SurePOS 700 Models 723, 743, C43, and 783 require new POS I/O and LAN drivers. Existing drivers for Models 4694 and Models 4800 will not work properly with these products. This notice applies to every supported operating system (OS): DOS, 4690 OS, Windows®, and Linux®. Additionally, a hard drive image for a predecessor product will not work properly. You must download the appropriate drivers from the IBM Retail Store Solutions Web site at http://www.ibm.com/solutions/retail/store/support.

Changing the first boot device

Follow these steps to change your system's first boot device:

1. Power on the system unit. When prompted, press the Delete key and then continue.
2. Select **Advanced BIOS Features**.
3. Select **First Boot Device** setting.
4. Select the required boot device (USB-FDD, or CD-ROM) for first boot device.
5. Press the F10 key to save your selections and exit.

Your new settings will take effect upon the next reboot.

Updating the system BIOS

One of your first installation steps is to ensure that the BIOS for your system is current. Locate the current BIOS for your system from the IBM Retail Store Solutions Web site at http://www.ibm.com/solutions/retail/store/support. If your BIOS is not current, download the current one and update your system. Follow the procedures in this section to install a BIOS update using either a USB floppy disk drive (FDD) or a USB memory key.

Using a USB floppy disk drive

To install a current BIOS level using a USB floppy disk drive:

1. Download the BIOS Update file from the IBM Retail Store Solutions Web site at http://www.ibm.com/solutions/retail/store/support.
2. Fully format a 1.44 MB floppy diskette. If bad sectors are reported, use another diskette. Use this command for best results:

   ```
   format a: /f:1.44
   ```

3. Do not write-protect the diskette.
4. With the formatted diskette in the floppy drive, execute the downloaded image file.
5. Follow the on-screen instructions to create the bootable BIOS diskette.

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Notes:
If problems are encountered while creating the diskette:

a. Try another diskette or another PC to create it.

b. Try downloading the image file again.

6. Attach an external USB floppy disk drive to the target system and insert the diskette.
7. Turn on or restart the target system, and allow it to boot from the diskette.

   Note: If you encounter problems getting the diskette to boot the system, follow the procedure in "Changing the first boot device" on page 1 to ensure that the FDD is enabled as a boot device.

The system will automatically turn off or restart when the BIOS update is complete.

Using a USB memory key

Follow the steps in this section to install a current BIOS level using a USB memory key.

Note: A Windows 2000 or Windows XP system is required to extract the memory key image.

1. Download the BIOS Update memory key image file from the IBM Retail Store Solutions Web site at http://www.ibm.com/solutions/retail/store/support.
2. Log in as the system administrator.
3. Run the self-extracting memory key image.
4. Read the BIOS update information screen.
5. Press OK to dismiss the text.
6. Select **Extract Image** from the application menu.
7. Follow the on-screen instructions to create the bootable USB memory key.

   Notes:
   If problems are encountered while creating the memory key:

   a. Try another memory key or another PC to create it.

   b. Try downloading the image file again.

8. Insert the USB memory key into a USB port on the target system.
9. Turn on or restart the target system, and allow it to boot the memory key.

   Note: If you encounter problems getting the memory key to boot the system, follow the procedure in "Changing the first boot device" on page 1 to ensure that the FDD is enabled as a boot device.

The system will automatically power off or restart when the BIOS update is complete.

Enabling the enhanced Serial ATA hard disk driver interface

IBM SurePOS 700 Models 723, 743, C43, and 783 have an embedded Serial ATA (SATA) controller with Advanced Host Controller Interface (AHCI) and Redundant Array of Independent Disks (RAID) support. To take advantage of either of these features, they must be enabled prior to operating system installation and the driver must be installed during the installation of the operating system. Once the operating system is installed, the mode of operation can not be changed without reinstalling the operating system.

AHCI and Native Command Queueing

If a hard drive is installed, the AHCI mode of operation can be enabled. NCQ may provide a performance benefit depending on the host operating system and application.

IBM will not provide a replacement or an upgrade of customer hard disk drives should this feature become standard. If the application requires a drive with NCQ support, you should submit an RPQ through your IBM Sales Representative. This information is provided to allow customers to prepare OS/Application images properly for future use.

RAID 0 and RAID 1

To take full advantage of the RAID function, you must install two drives. With two drives installed, the native RAID function supports both RAID 0 and RAID 1. For two drive implementations, RAID 1 is the recommended mode of operation.

Enabling RAID and using the RAID driver is the recommended mode of operation for one and two drive configurations. The RAID mode of operation will take advantage of NCQ[1] with single drive systems. Also, single drive systems with RAID enabled can be later upgraded to two drive systems by just adding the second hard disk drive, booting the OS and using the RAID utility to create an array without requiring the OS or applications to be reinstalled.

RAID 0 (striping)
Increases the system hard disk performance, however the overall reliability is reduced as a single drive failure will result in total data loss.

RAID 1 (mirroring)
Does not increase performance, but the drives are maintained as identical copies. If one hard disk drive experiences a hardware failure, the system will continue to function until the failing drive can be serviced.

Note: RAID does not prevent or eliminate errors caused by OS issues, application failures, corrupt files, viruses and other software induced problems that are often perceived as hard drive failures. RAID 1 can only minimize the impact of a single hard drive hardware failure.

Enabling RAID or the AHCI mode

These procedures are for the Windows XP or 2000 installation.

1. Press Delete during BIOS power-on self-test (POST).
2. Select **Integrated Peripherals** and press Enter.
3. Select **VIA OnChip IDE Device** and press Enter.
4. Select **SATA Controller Mode** and press Enter.
5. Select **AHCI** or **RAID**.
6. Select **Save & Exit**.

   Note: If you selected RAID mode, continue with these steps:
7. Follow the on-screen instructions to enter the RAID configuration utility during BIOS POST.
8. Select **Create Array** and press Enter.
9. Follow the on-screen instructions to configure and create your RAID.

---

1. Dependant upon the NCQ feature becoming the standard in the industry.

Creating a VIA V-RAID Storage Controller Driver Diskette

The VIA V-RAID driver package provides a tool which enables the creation of a RAID storage controller driver diskette. Follow the directions below to create the required driver diskette. It is recommended that an empty diskette be used as any data on the diskette will be destroyed durin g the driver diskette creation process.

1. Download the latest VIA V-RAID driver package from the IBM Retail Store Solutions Web site at http://www.ibm.com/solutions/retail/store/support.
2. Unzip the package to any Windows 2000, Windows XP, or Windows Vista system.
3. Browse to the VraidDrv folder within the extracted zip file (see Figure 1).

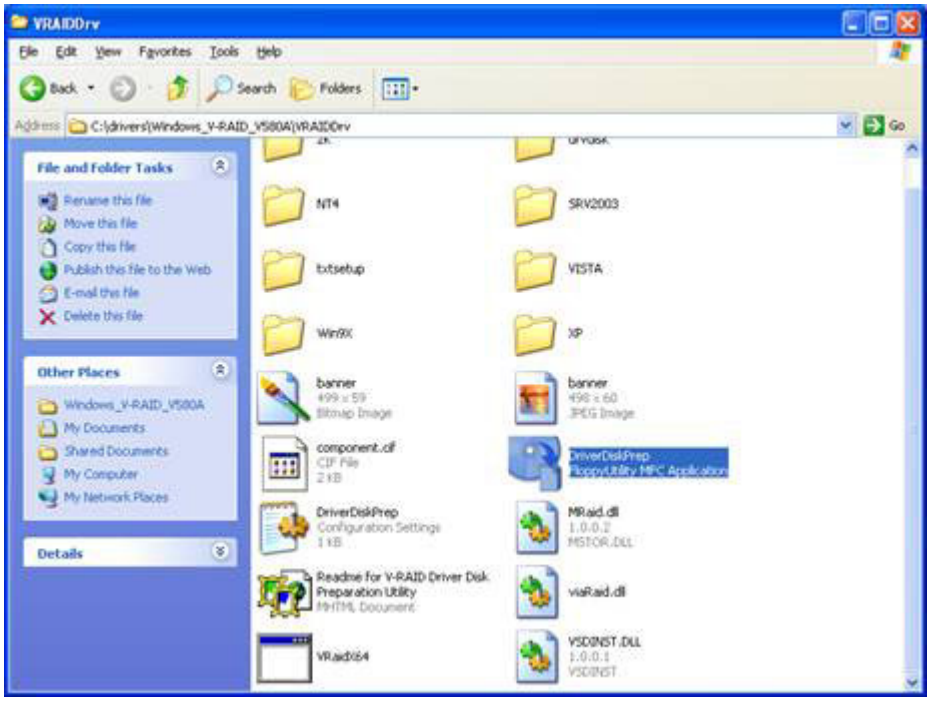

Figure 1. VraidDrv Folder

4. Execute the DriverDiskPrep utility.

5. Select the desired target operating system (see Figure 2).

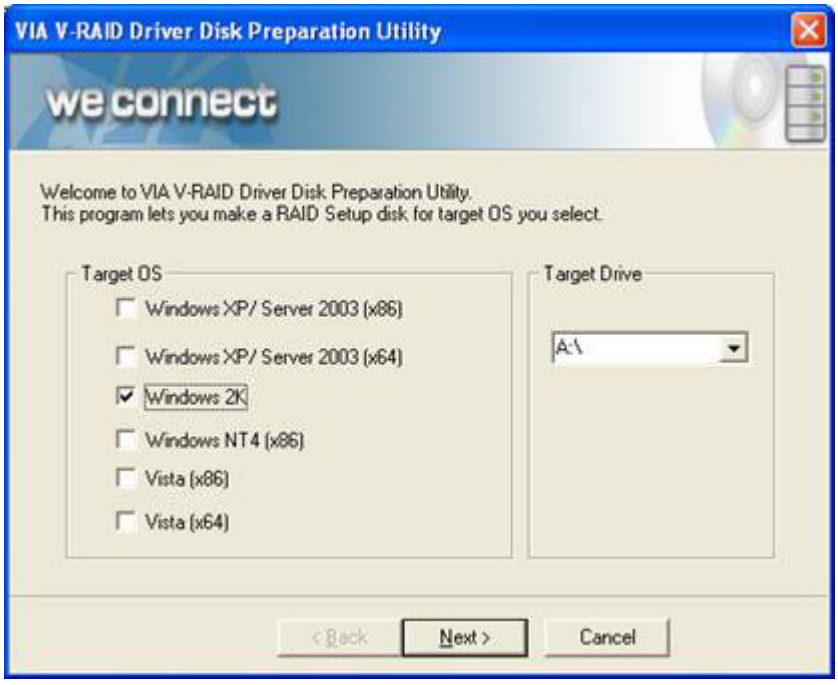

Figure 2. Select Operation System

6. Upon selecting the operating system, the “Target Drive” field will show the target disk drive. Confirm the correct drive is shown and click “Next”.
7. Click “Next” again to initiate the diskette creation process (see Figure 3).

Figure 3. Disk Creation

8. Upon completion (see Figure 4), the diskette may be used to install the RAID storage driver during a Windows installation.

Figure 4. V-RAID Complete

Chapter 2. Installing Windows 2000

This section describes the installation steps for Windows 2000.

Hardware and software requirements

This installation requires a SurePOS 723, 743, C43, and 783 with a minimum configuration as follows:

- 128 MB read access memory (RAM)
- 40 GB minimum, partitioned and formatted hard disk drive
- USB or PS/2 keyboard
- Internal optical or external USB CD-ROM
- External USB floppy disk drive for certain installation configurations
- Windows 2000 Professional installation CD
- Creating a VIA V-RAID Storage Controller Driver Diskette (see “Creating a VIA V-RAID Storage Controller Driver Diskette” on page 4).

CD-ROM preinstallation steps

If you are installing from an external USB CD-ROM drive, be aware that some USB CD-ROM drives are not supported by the Windows 2000 installation process. Unsupported CD-ROM drives may cause a `STOP 7B` message during installation. To test if your CD-ROM drive is supported, boot from the Windows 2000 CD. If the STOP message is displayed, follow the steps in this section to work around the issue.

The resolution for the STOP message is to add the USB CD-ROM drive’s Vendor and Product ID to the TXTSETUP.SIF file. However, because the CD-ROM is read-only, this modification must be done to TXTSETUP.SIF on the Setup Boot Diskettes. Follow the instructions for either Option A or B below to assist with these modifications.

Option A

1. Attach the USB CD-ROM drive to any computer. Wait until the system has detected the drive and it is functional.
2. Run **usbview.exe** (available freely on the Internet), select the CD-ROM drive, and note the **idVendor** and **idProduct**.
3. Add the USB CD-ROM Drive Vendor (VID) and Product ID (PID) to the `{HardwareIdsDatabase}` section of txtsetup.sif; for example:

   ```
   USB\VID_04B3&PID_4427 = "usbstor";IBM USB CD-ROM VID/PID P/N 22l5151
   ```

Option B

1. Attach the USB CD-ROM drive to any computer.
2. Wait until the system has detected the drive and it is functional.
3. Open System Information and look for the CD-ROM under **Components > USB**.

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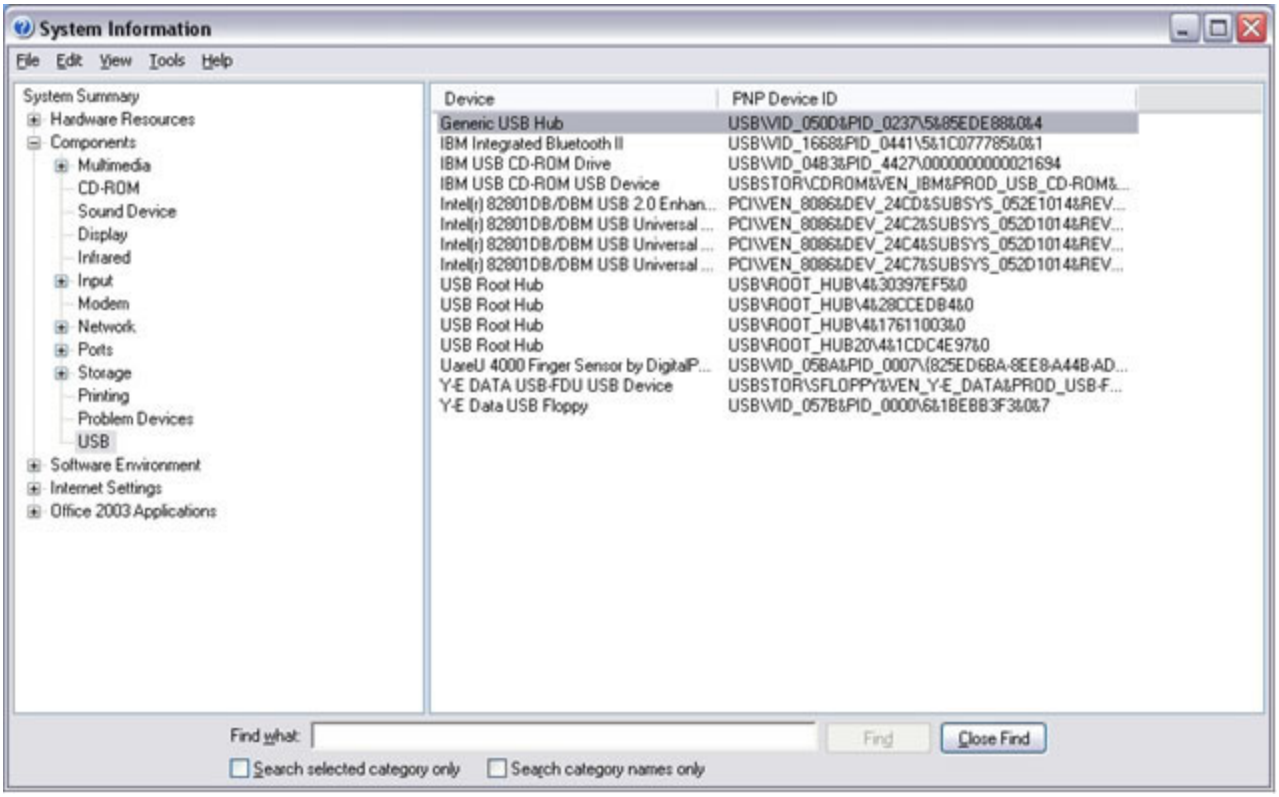

Figure 5. System Information window

4. Record the value for the PNP Device ID of your CD-ROM.
5. Modify TXTSETUP.SIF and add the Vendor (VID) and Product (PID) ID into the TXTSETUP.SIF file using this format:

   `"MatchingDeviceId" = "usbstor" ;`*`Drive Description`*

Table 1. Vendor/product ID for Windows 2000 Professional setup

"**MatchingDeviceID**"	**Value from PNP Device ID**
`="usbstore"`	Leave as is, including quotes and spaces
`;`*`Drive Description`*	May be any text you would like to identify your device.
Example: `USB\VID_04B3&PID_4427 = "usbstor";IBM USB CD-ROM VID/PID`	

6. Begin the installation of Windows 2000 by booting from the floppy diskettes rather than from the CD-ROM. The CD-ROM will still be required to continue installation.

This modification could be made for any USB CD-ROM drive that is not supported by the Windows 2000 Setup.

CD-ROM installation

Follow these steps to install Windows 2000 from the CD-ROM:

1. Insert the operating system installation CD into the system CD-ROM drive.
2. Turn on the system.
3. If prompted, press any key to boot from the CD.
4. If a STOP 7B blue screen message is encountered, follow the “CD-ROM preinstallation steps” on page 7 and then continue with these steps.
5. If you are using a RAID or AHCI configuration, during the installation, the Windows install screen prompts you to `Press F6 if you need to install any 3rd party SCSI or RAID Driver`:
   a. Press F6.
   b. When prompted, insert the storage controller driver diskette.
   c. Press S to select the driver from the storage controller driver diskette.
   d. Select **VIA V-RAID Controller Series (Windows 2K)**.
   e. Press Enter to allow the installation to continue.
6. Follow the on-screen instructions to complete the installation.
7. Once Windows installation is complete, continue with Chapter 4, “Installing system drivers on Windows OS,” on page 13.

Chapter 3. Installing Windows XP

Hardware and software requirements

The minimum requirements for this installation:

- 128 MB read access memory (RAM)
- 40 GB minimum, partitioned and formatted hard disk drive
- USB or PS/2 keyboard
- Internal CD-ROM or external USB CD-ROM drive
- External USB floppy disk drive for certain installation configurations
- Windows XP Professional installation CD
- Creating a VIA V-RAID Storage Controller Driver Diskette (see “Creating a VIA V-RAID Storage Controller Driver Diskette” on page 4).

CD-ROM installation

Follow these steps to install Windows XP from the CD-ROM:

1. Insert the operating system installation CD into the system CD-ROM drive.
2. Turn on the system.
3. If prompted, press any key to boot from the CD.
4. If you are using a RAID or AHCI configuration, during the installation, the Windows install screen prompts you to `Press F6 if you need to install any 3rd party SCSI or RAID Driver`:
   a. Press F6.
   b. When prompted, insert the storage controller driver diskette.
   c. Press S to select the driver from the storage controller driver diskette.
   d. Select **VIA V-RAID Controller Series (Windows XP/SRV2003)**.
   e. Press Enter to allow the installation to continue.
5. Follow the on-screen instructions to complete the installation.
6. Once Windows installation is complete, continue with Chapter 4, “Installing system drivers on Windows OS,” on page 13.

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Chapter 4. Installing system drivers on Windows OS

To ensure that the system functions properly, the Windows drivers and update packages in this section must be downloaded and installed in the order listed below.

Note: Check the IBM Retail Store Solutions Web site at http://www.ibm.com/solutions/retail/store/support for the latest driver updates. Then check the readme.txt files that come with the driver updates, for specific driver information.

1. Network interface card drivers
2. Latest Windows service packs and patches
3. Chipset drivers
4. Remaining drivers, in any order

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Chapter 5. Installing PC DOS 2000

This section describes how to install PC DOS 2000.

Important

Ensure the hard disk does not have any files or operating systems that need to be saved. The installation process will modify the boot record and operating system files.

Diskette installation

Follow these steps to install PC DOS 2000:

1. Boot from the first PC DOS installation diskette.
2. If prompted to continue the PC DOS Setup, press Y for yes.
3. Follow the on screen prompts to complete the installation of PC DOS 2000.

For further instructions, see the PC DOS 2000 readme.txt.

PCI serial port configuration

Prerequisites

Hardware:

- SurePOS 700 with PC DOS 2000 installed
- IBM PCI Serial Port Mapper

The configuration of the PCI serial ports in DOS is accomplished through the IBM PCI Serial Port Mapper. The IBM PCI Serial Port Mapper maps the PCI serial ports down in to the BIOS data area (BDA) where you can use them in a similar manner as a legacy DOS serial port. Table 2 on page 16 provides the supported command line parameters that you can use to configure the PCI serial port mappings.

ASICMAP.exe is a utility which is capable of mapping the I/O addresses in the PCI serial device to DOS legacy COM ports. Outlined in this article are common usages for the utility.

Supported System Units:

- IBM 4800–7x2
- IBM 4800–7x3

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Table 2. Command Line Parameters

Parameter	Definition
-ENUM	Enumerates and displays the current serial port configuration.
-FROMPCI=SERIALx	Specifies the PCI serial port on which the mapping is being made. The following parameters are required to be used with this switch: - TOCOM Valid Values: SERIALC, SERIALD, SERIALE, SERIALF, SERIALE, SERIALG, and SERIALH
-TOCOM=COMx	- Specifies the DOS COM port to which the PCI serial port is to be mapped. Valid Values: COM1, COM2, COM3, and COM4
Optional Switches	
-OVERWRITE	Overwrites an existing PCI serial to COM port mapping.
-LEGACY	Specifies that a legacy I/O address is applied to the serial port mapping.

These are examples of what different parameters do:

–ASICMAP.EXE -TOCOM=COM3 -FROMPCI=SERIALH -LEGACY
Mapping Serial H to COM3[set I/O address to 3E8h]

-ASICMAP.EXE -TOCOM=COM3 -FROMPCI=SERIALH
Mapping Serial H to COM3

-ASICMAP.EXE -TOCOM=COM3 -FROMPCI=SERIALH -OVERWRITE
Mapping Serial H to COM3[Overwrite previous COM3 mapping]

Power management

SurePOS 700 system processors provide the highest performance and power, both thermal and electrical, that are currently available. Models 723, 743, C43, and 783 are designed to handle these new higher power requirements.

However, being a very simple operating system, DOS provides no automatic power management features. Additionally, unlike most other operating systems, DOS consumes a significant amount of processor power when idle. The idle DOS system can cause the processor to generate a significant amount of heat. This heat results in system fans running faster to remove the heat.

The SurePOS 700 is designed to support the DOS power management driver **power.exe**. When the DOS power management driver is used on the SurePOS 700, the DOS idle condition behaves much like the modern idle operating systems. The result will be a cooler and quieter running system. While the system is designed to support DOS without the **power.exe** driver, IBM recommends that you use the driver in DOS configurations.

The DOS power management tool is provided with the DOS installation package, locate the tool in the DOS directory after the operating system is installed.

To load the **power.exe** file:

1. Add this line to the CONFIG.SYS file:

   ```
   device=c:\dos\power.exe
   ```

2. Add this line to the AUTOEXEC.BAT file:

   ```
   c:\dos\power.exe
   ```

Note: The default location for **power.exe** is in the DOS directory after DOS is installed.

Chapter 6. Using the RAID application

The Redundant Array of Independent Disks (RAID) application supports Models 723, 743, C43, and 783 with one or two hard disk drives and the Microsoft Windows operating system. RAID provides an error message if one of the two hard disk drives experiences a failure.

VIA RAID User's Guide for IBM SurePOS 700-xx3

Requirements/Prerequisites

Hardware:

- Two Serial ATA hard disks
- IBM SurePOS 700-xx3

Operating Systems:

- Windows 2000 Professional
- Windows XP Professional
- Windows Vista

Software:

- VIA RAID Driver package from the IBM support site
- VIA RAID Installation Diskette

BIOS Configuration:

- RAID enabled in BIOS setup
- RAID Array configured in V-RAID Boot BIOS

Introduction

The VIA V-RAID Windows Configuration tool enables the configuration, monitoring, and event logging of the VIA V-RAID driver. This package enables the configuration of a RAID-0 or RAID-1 drive array on the IBM 4800-xx3. RAID-0 features and implementation will be the focus of this guide due to the failure recovery features offered.

Using the V-RAID Utility and Features

This section describes how to use the V-RAID Utility and its features

Opening the V-RAID Utility

The V-RAID Utility can be opened through the **Start** button (see Figure 6 on page 20), or by double-clicking the **VIA V-RAID** symbol (see Figure 7 on page 20) in the system tray.

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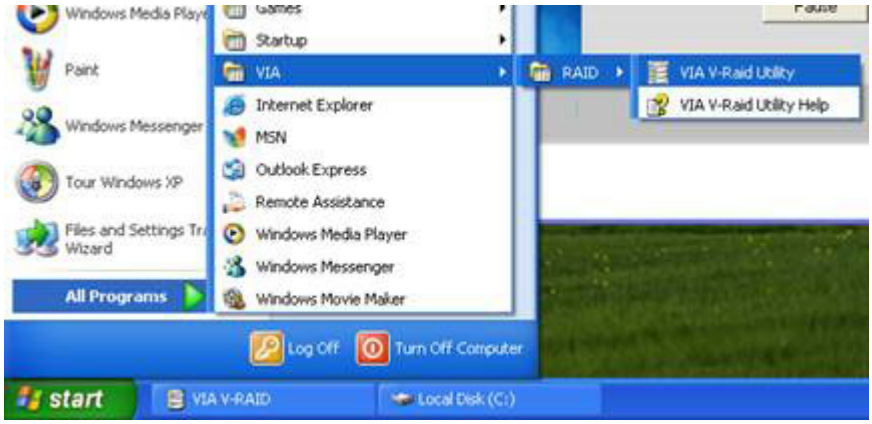

Figure 6. V-RAID Utility

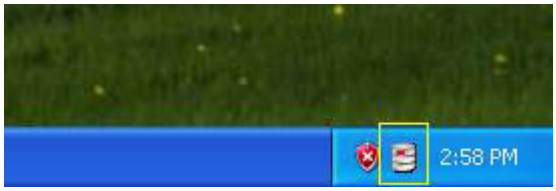

Figure 7. V-RAID Utility Symbol

VIA V-RAID Main Screen

The V-RAID Main Screen enables the configuration, verification, and status of the V-RAID configuration.

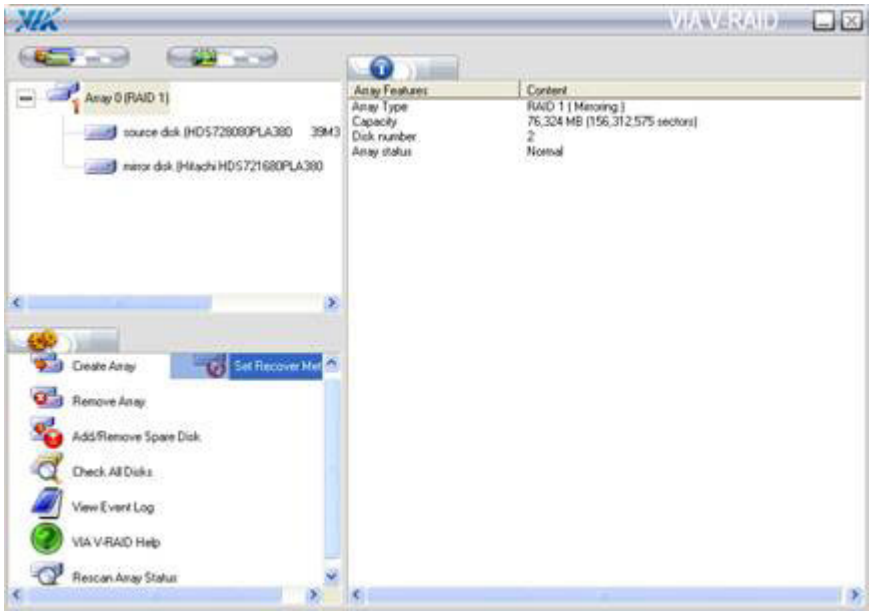

Figure 8. V-RAID Main Screen

Below are brief descriptions of each function in the in the operation menu.

Create Array

Allows new RAID arrays to be created if no configured RAID arrays are present.

Remove Array

Breaks a RAID array. Data is not lost on the source disk. The mirror disk may be used in a manner independent of the source disk.

Add/Remove Spare Disk

Adds a spare disk to the RAID array in the event of a RAID failure.

Note: This feature can not be utilized on the IBM 4800-xx3 due to the fact that only two drive bays are available.

Check All Disks

Performs a diagnostic check of the RAID array to ensure hard disk and RAID array integrity (see Figure 9 on page 22).

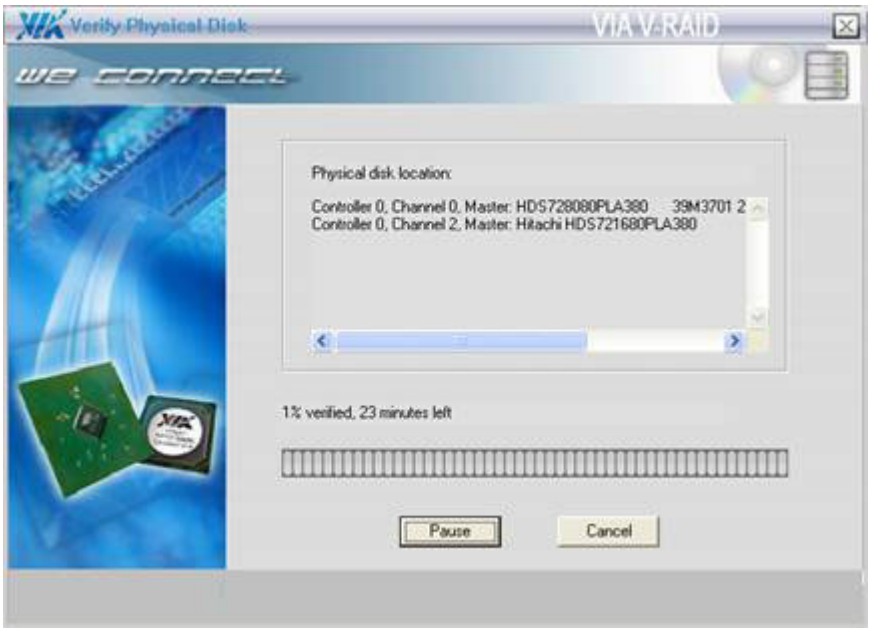

Figure 9. V-RAID Diagnostic

View Event Log

Displays the contents of the V-RAID event log. In addition to the V-RAID event log, Windows also maintains status of actions taken by the V-RAID service in the Windows event log (see “Diagnosing RAID Events” on page 23) for more details.

VIA V-RAID Help

Provides additional details on features and functions in the V-RAID utility.

Rescan Array Status

Performs a quick verification of the RAID array status.

Set Recovery Mode

In the event of a RAID Recovery event, this setting determines if the RAID recovery occurs automatically, or requires the user to invoke the recovery process (see Figure 10). RAID Recovery events occur when a failed disk in a RAID array is replaced with a new disk.

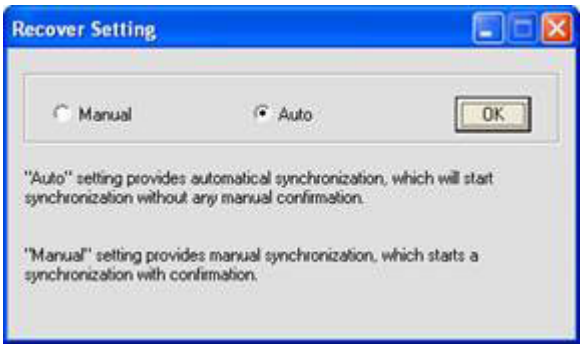
Recover Setting
Manual
Auto
OK
"Auto" setting provides automatical synchronization, which will start synchronization without any manual confirmation.
"Manual" setting provides manual synchronization, which starts a synchronization with confirmation.

Figure 10. V-RAID Recovery

Diagnosing and Handling RAID Events

Problems with configured RAID arrays may be diagnosed with the VIA V-RAID driver package. This section will detail the steps required to diagnose and handle RAID events.

Diagnosing RAID Events

RAID events occur when changes or problems with regards to the RAID array are detected by the VIA V-RAID driver package. RAID events are processed in two methods:

- Events are logged to the Windows Application Event Log (see Figure 11)
- A dialog box is displayed reporting a broken RAID array (see Figure 12)

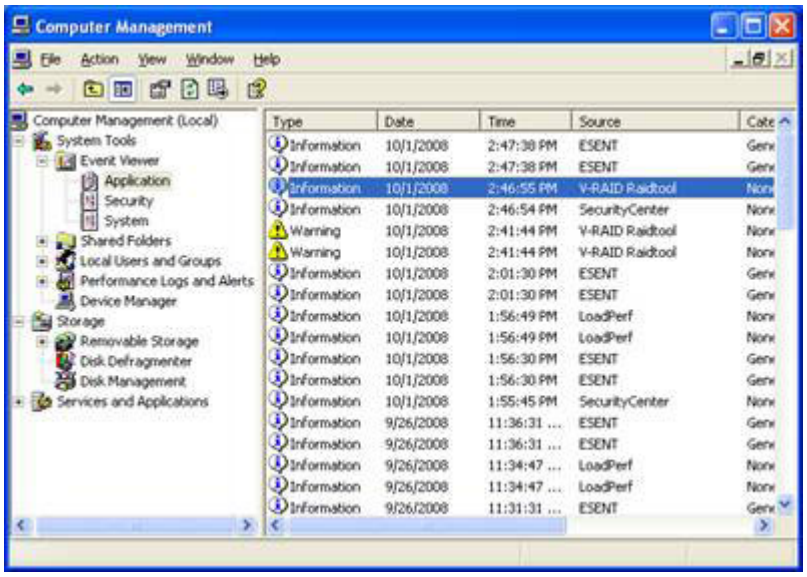

Figure 11. Windows Application Event Log

Note: (see “Repairing a Broken RAID Mirror” on page 24) before clicking "Yes".

Figure 12. Broken Array

Windows Application Event Log

RAID events are logged in Windows Application Event Log. These RAID events include:

- Broken RAID Arrays (Event ID 1705)
- Drive recovery/synching (Event ID 1760)

Below are sample event log entries.

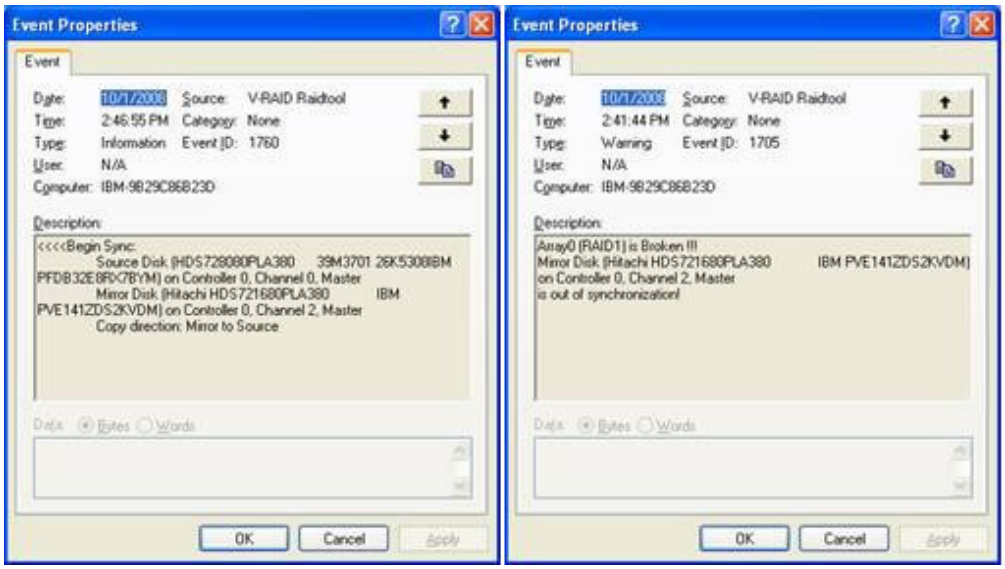

Figure 13. Sample Event Log Entries

Repairing a Broken RAID Mirror

When a RAID array is broken, it is critical that the event be handled promptly to ensure that the risk to data integrity is minimized. The process below outlines how to properly restore a broken RAID mirror.

1. Determine which drive is failing.

   The Windows Application Event Log contains the information required to determine which failing drive is contributing to the broken mirror. Figure 13 contains an example of a broken array event (Event ID 1705). Indicated in the event log entry is the failed drive [controller 0, channel 2(bottom hard disk slot)]. Depending on the failed drive, the indicated disk which is out of synchronization may vary. Table 3 contains the mapping of possible controller channels to physical system hard disk slots.

Table 3. Physical Slot Mapping

Slot ID	Physical Hard Disk Slots
Controller 0, Channel 0	Top Hard Disk Slot
Controller 0, Channel 2	Bottom Hard Disk Slot

2. Replace the Indicated Failed Drive.

   The VIA V-RAID driver does ***not*** support hot plugging. Attempting to hot plug a hard disk may result in unpredictable behavior.

   a. Power off the system
   b. Replace the failed drive
   c. Power on the system
   d. Allow the VIA V-RAID driver to synchronize the new disk drive. During the time the new drive is synchronizing, the system may be used in a normal manner.

Replacing and rebuilding a hard drive

Note: Before beginning these procedures, you should have completed one of the two methods on determining the failed hard disk drive.

1. Follow the steps in the "Removing the hard disk drive" section in the *IBM SurePOS 700 Series - SurePOS 700-723/743/783 Hardware Service Guide* to remove and replace the failing hard disk drive.
2. Reassemble the machine and power on.

After the operating system has loaded, the RAID application will automatically begin rebuilding the hard disk drive. During this process, you can use the machine normally. Rebuilding time will vary depending upon the size of the partition, amount of data and system activity during the rebuild.

Accessing the RAID setup menu

After enabling the RAID function from the BIOS setup menu, you can enter the RAID setup menu before the Windows OS starts by pressing Ctrl+C or Ctrl+Z on the keyboard. Figure 14 is an example of the menu.

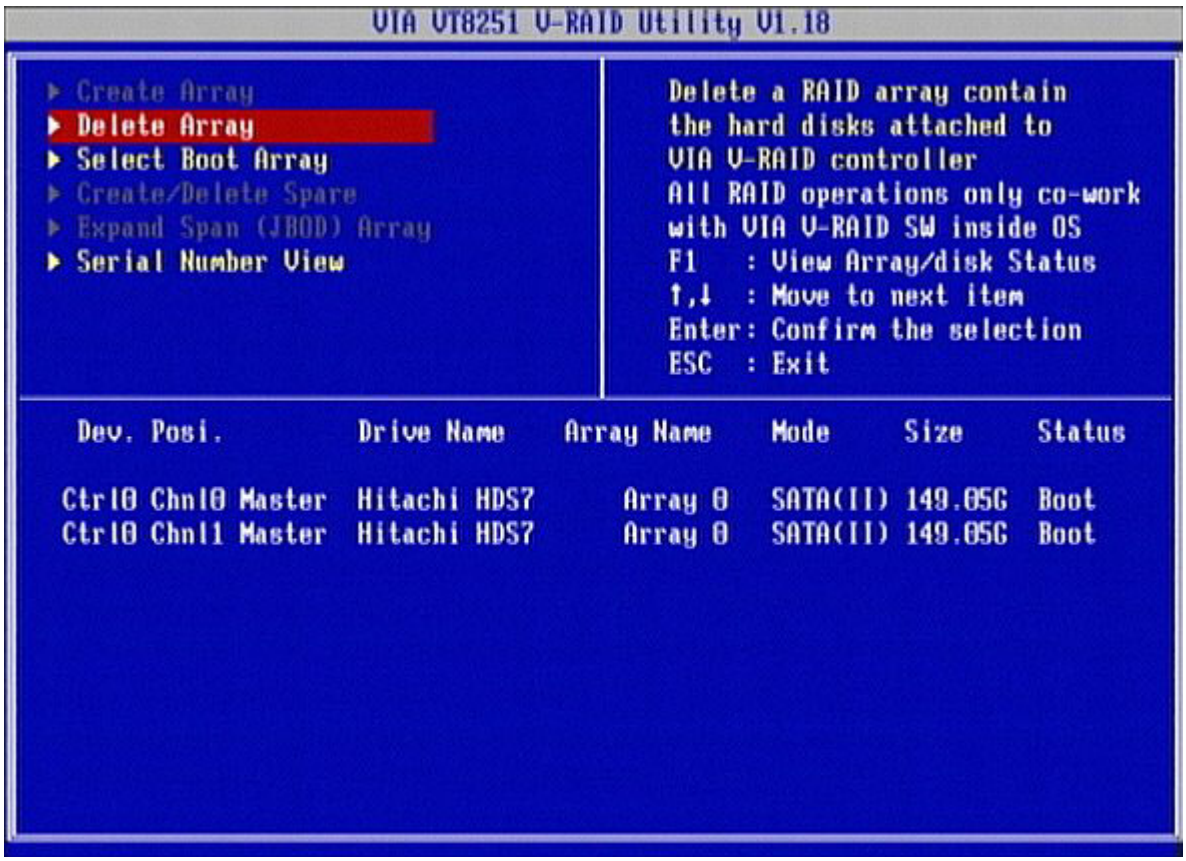
VIA VT8251 V-RAID Utility V1.18
Create Array
Delete Array
Select Boot Array
Create/Delete Spare
Expand Span (JBOD) Array
Serial Number View
Delete a RAID array contain
the hard disks attached to
VIA V-RAID controller
All RAID operations only co-work
with VIA V-RAID SW inside OS
F1 : View Array/disk Status
↑,↓ : Move to next item
Enter: Confirm the selection
ESC : Exit
Dev. Posi. Drive Name Array Name Mode Size Status
Ctrl0 Chn10 Master Hitachi HDS7 Array 0 SATA(II) 149.05G Boot
Ctrl0 Chn11 Master Hitachi HDS7 Array 0 SATA(II) 149.05G Boot

Figure 14. Example of the RAID setup menu

Appendix A. Safety information

Danger:

Before you begin to install this product, read the safety information in *IBM Safety Information — Read This First*, GA27-4004. This booklet describes safe procedures for cabling and plugging in electrical equipment.

Gevaar:

Voordat u begint met de installatie van dit produkt, moet u eerst de veiligheidsinstructies lezen in de brochure *Veiligheidsinstructies—Lees dit eerst*, GA27-4004. Hierin wordt beschreven hoe u electrische apparatuur op een veilige manier moet bekabelen en aansluiten.

Perigo:

Antes de começar a instalar este produto, leia as informações de segurança contidas em *Informações Sobre Seguranaça—Leia Isto Primeiro,* GA27-4004. Esse folheto descreve procedimentos de segurança para a instalação de cabos e conexões em equipamentos elétricos.

Fare!

Før du installerer dette produkt, skal du læse sikkerhedsforskrifterne i *Sikkerhedsforskrifter—Læs dette først* GA27-4004. Vejledningen beskriver den fremgangsmåde, du skal bruge ved tilslutning af kabler og udstyr.

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Gevaar

Voordat u begint met het installeren van dit produkt, dient u eerst de veiligheidsrichtlijnen te lezen die zijn vermeld in de publikatie *IBM Safety Information — Read This First*, GA27-4004. In dit boekje vindt u veilige procedures voor het aansluiten van elektrische appratuur.

VAARA

Ennen kuin aloitat tämän tuotteen asennuksen, lue julkaisussa *Turvaohjeet—Luetämä ensin*, GA27-4004, olevat turvaohjeet. Tässä kirjasessa on ohjeet siitä, miten sähkölaitteet kaapeloidaan ja kytketään turvallisesti.

Danger

Avant d'installer le présent produit, consultez le livret *Informations pour la sécurité–Lisez-moi d'abord*, GA27-4004, qui décrit les procédures à respecter pour effectuer les opérations de câblage et brancher les équipements électriques en toute sécurité.

Vorsicht

Bevor mit der Installation des Produktes begonnen wird, die Sicherheitshinweise in *Sicherheitsinformationen—Bitte zuerst lesen,* IBM Form GA27-4004. Diese Veröffentlichung beschreibt die Sicherheitsvorkehrungen für das Verkabeln und Anschlie*ß*en elektrischer Geräte.

Vigyázat

Mielôtt megkezdi a berendezés üzembe helyezését, olvassa el a *IBM Safety Information — Read This First*, GA27-4004 könyvecskében leírt biztonsági információkat. Ez a könyv leírja, milyen biztonsági intézkedéseket kell megtenni az elektromos berendezés huzalozásakor illetve csatlakoztatásakor.

Pericolo

prima di iniziare l'installazione di questo prodotto, leggere le informazioni relative alla sicurezza riportate nell'opuscolo *Informazioni di sicurezza—Prime informazioni da leggere* in cui sono descritte le procedure per il cablaggio ed il collegamento di apparecchiature elettriche.

Fare

Før du begynner å installere dette produktet, må du lese sikkerhetsinformasjonen i *Sikkerhetsinformasjon—Les dette først,* GA27-4004 som beskriver sikkerhetsrutinene for kabling og tilkobling av elektrisk utstyr.

Perigo

Antes de iniciar a instalação deste produto, leia as informações de segurança *Informações de Segurança—Leia Primeiro,* GA27-4004. Este documento descreve como efectuar, de um modo seguro, as ligações eléctricas dos equipamentos.

Peligro

Antes de empezar a instalar este producto, lea la información de seguridad en *Información de Seguridad—Lea Esto Primero,* GA27-4004. Este documento describe los procedimientos de sequridad para cablear y enchufar equipos eléctricos.

Varning—livsfara

Innan du börjar installera den här produkten bör du läsa säkerhetsinformationen i dikumentet *Säkerhetsföreskrifter—Läs detta först,* GA27-4004. Där beskrivs hur du på ett säkert sätt ansluter elektrisk utrustning.

危險：安裝本產品之前， 請先閱讀
"IBM Safety Information--Read
This First" GA27-4004 手冊中所提
供的安全注意事項。 這本手冊將會說明
使用電器設備的纜線及電源的安全程序。

Opasnost: Prije nego sto počnete sa instalacijom produkta,
pročitajte naputak o pravilima o sigurnom rukovanju u
Upozorenje: Pravila o sigurnom rukovanju - Prvo pročitaj ovo,
GA27-4004. Ovaj privitak opisuje sigurnosne postupke za
priključrivanje kabela i priključivanje na električno napajanje.

Upozornění: než zahájíte instalaci tohoto produktu, přečtěte si
nejprve bezpečnostní informace v pokynech „ Bezpečnostní
informace“ č. GA27-4004. Tato brožurka popisuje bezpečnostní
opatření pro kabeláž a zapojení elektrického zařízení.

Κίνδυνος: Πριν ξεκινήσετε την εγκατάσταση αυτού του προϊόντος,
διαβάστε τις πληροφορίες ασφάλειας στο φυλλάδιο *IBM Safety
Information-Read this first,* GA27-4004. Στο φυλλάδιο αυτό
περιγράφονται οι ασφαλείς διαδικασίες για την καλωδίωση των
ηλεκτρικών συσκευών και τη σύνδεσή τους στην πρίζα.

危険： 導入作業を開始する前に、安全に関する
小冊子 GA27-4004 の「最初にお読みください」
(Read This First)の項をお読みください。
この小冊子は、電気機器の安全な配線と接続の
手順について説明しています。

위험: 이 제품을 설치하기 전에 반드시
"주의: 안전 정보-시작하기 전에"
(GA27-4004) 에 있는 안전 정보를
읽으십시오.

סכנה: לפני שמתחילים בהתקנת מוצר זה, יש לקרוא את הוראות הבטיחות בחוברת
Caution: Safety Information - Read This First, GA27-4004
חוברת זו מתארת את הוראות הבטיחות לחיבור הכבלים ולחיבור לחשמל של ציוד חשמלי.

خطـــر: قبـــل عمـــلية بـــدء تركيـــب هذا المنتـــج، قم بقراءة معلومـــات
الحمـــاية الموجودة في التحذيـــر: معلومـــات الحمـــاية – Read This First،
GA27-4004 . يقـــوم هذا الكتيـــب بوصـــف اجـــراءات الآمـــان
لتوصـــيل الأدوات الكـــهربائية بالكـــابلات والمقبـــس الكـــهربائـــي.

ОПАСНОСТ
Пред да почнете да го инсталирате овој продукт, прочитајте ја информацијата за безбедност:
"Предупредување: Информација за безбедност: Прочитајте го прво ова", GA27-4004.
Оваа брошура опишува безбедносни процедури за каблирање и вклучување на електрична опрема.

Uwaga:
Przed rozpoczęciem instalacji produktu należy zapoznać się z instrukcją:
"IBM Safety Information - Read This First", GA27-4004.
Zawiera ona warunki bezpieczeństwa przy podłączaniu do sieci elektrycznej i eksploatacji.

ОСТОРОЖНО: Прежде чем инсталлировать этот продукт, прочтите Инструкцию по технике безопасности в документе "Внимание: Инструкция по технике безопасности -- Прочесть в первую очередь", GA27-4004. В этой брошюре описаны безопасные способы каблирования и подключения электрического оборудования.

Nebezpečenstvo: Pred inštaláciou výrobku si prečítajte bezpečnosté predpisy v
Výstraha: Bezpeč osté predpisy - Prečítaj ako prvé, GA27-4004. V tejto brožúrke sú opísané bezpečnosté postupy pre pripojenie elektrických zariadení.

Pozor: Preden zaènete z instalacijo tega produkta preberite poglavje: 'Opozorilo: Informacije o varnem rokovanju-preberi pred uporabo," GA27-4004. To poglavje opisuje pravilne postopke za kabliranje,

危險：

開始安裝此產品之前，請先閱讀安全資訊。

注意：

請先閱讀 - 安全資訊 GA27-4004

此冊子說明插接電器設備之電纜線的安全程序。

危险：
在开始安装本产品之前，请阅读
IBM Safety Information - Read This First，
GA27-4004 中的安全信息。
此手册描述了如何安全地连接和插拔电气设备。

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Electronic emission notices

Federal Communications Commission (FCC) statement

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his own expense.

Properly shielded and grounded cables and connectors must be used in order to meet FCC emission limits. IBM is not responsible for any radio or television interference caused by using other than recommended cables and connectors or by unauthorized changes or modifications to this equipment. Unauthorized changes or modifications could void the user's authority to operate the equipment.

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference, and
2. This device must accept any interference received, including interference that may cause undesired operation.

European Union EMC Directive conformance statement

This product is in conformity with the protection requirements of EU Council Directive 2004/108/EC on the approximation of the laws of the Member States relating to electromagnetic compatibility. IBM cannot accept responsibility for any failure to satisfy the protection requirements resulting from a non-recommended modification of the product, including the fitting of non-IBM option cards.

This product has been tested and found to comply with the limits for Class A Information Technology Equipment according to CISPR 22/European Standard EN 55022. The limits for Class A equipment were derived for commercial and industrial environments to provide reasonable protection against interference with licensed communication equipment.

Attention: This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

European Community contact:

IBM Technical Regulations
Pascalstr. 100, Stuttgart, Germany 70569
Telephone: 0049 (0)711 785 1176
Fax: 0049 785 1283
E-mail: tjahn@de.ibm.com

Industry Canada Class A Emission Compliance statement

This Class A digital apparatus complies with Canadian ICES-003.

Avis de conformité aux normes d'Industrie Canada

Cet appareil numérique de la classe A est conforme à la norme NMB-003 du Canada.

Germany

Zulassungsbescheinigung laut dem Deutschen Gesetz über die elektromagnetische Verträglichkeit von Geräten (EMVG) vom 30. August 1995 (bzw. der EMC EG Richlinie 89/336).

Dieses Gerät ist berechtigt in Übereinstimmung mit dem Deutschen EMVG das EG-Konformitätszeichen - CE - zu führen.

Verantwortlich für die Konformitätserklärung nach Paragraph 5 des EMVG ist die

IBM Deutschland Informationssysteme GmbH, 70548 Stuttgart

Informationen in Hinsicht EMVG Paragraph 3 Abs. (2) 2:

Das Gerät erfüllt die Schutzanforderungen nach EN 50082–1 und EN 55022 Klasse A.

EN 55022 Klasse A Geräte müssen mit folgendem Warnhinweis versehen werden:

″Warnung: dies ist eine Einrichtung der Klasse A. Diese Einrichtung kann im Wohnbereich Funkstörungen verursachen; in diesem Fall kann vom Betreiber verlangt werden, angemessene Maβnahmen durchzuführen und dafür aufzukommen.″

EN 50082–1 Hinweis:

″Wird dieses Gerät in einer industriellen Umgebung betrieben (wie in EN 50082–2 festgelegt), dann kann es dabei eventuell gestört werden. In solch einem Fall ist der Abstand bzw. die Abschirmung zu der industriellen Störquelle zu vergrößern.″

Anmerkung:

Um die Einhaltung des EMVG sicherzustellen sind die Geräte, wie in den IBM Handbüchern angegeben, zu installieren und zu betreiben.

Australia and New Zealand

Attention: This is a Class A product. In a domestic environment this product may cause radio interference, in which case the user may be required to take adequate measures.

Chinese Class A warning statement

Attention: This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

中华人民共和国“A 类”警告声明

声　明

此为 A 级产品，在生活环境中，该产品可能会造成无线电干扰。在这种情况下，可能需要用户对其干扰采取切实可行的措施。

Japanese power line harmonics compliance statement

高調波ガイドライン適合品

高調波ガイドライン適合品

Japanese Voluntary Control Council for Interference (VCCI) statement

Attention: This product is a Class A Information Technology Equipment and conforms to the standards set by the Voluntary Control Council for Interference by Technology Equipment (VCCI). In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

この装置は、情報処理装置等電波障害自主規制協議会（ＶＣＣＩ）の基準に基づくクラスＡ情報技術装置です。この装置を家庭環境で使用すると電波妨害を引き起こすことがあります。この場合には使用者が適切な対策を講ずるよう要求されることがあります。

Korean communications statement

Please note that this device has been approved for business purposes with regard to electromagnetic interference. If you find this is not suitable for your use, you may exchange it for a non-business purpose one.

A급 기기(업무용)

이 기기는 업무용으로 전자파적합등록을 받은 기기이오니 판매자 또는 이용자는 이점을 주의하시기 바라며, 만약 구입하였을 때에는 구입한 곳에서 가정용으로 교환하시기 바랍니다.

Taiwanese Class A warning statement

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居住的環境中使用時，可
能會造成射頻干擾，在這
種情況下，使用者會被要
求採取某些適當的對策•

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台北市松仁路7號3樓
電話：0800-016-888

IBM Taiwan Product Service Contact Info:
IBM Taiwan Corporation
3F, No 7, Song Ren Road, Taipei Taiwan
Telephone: 0800-016-888

Cable ferrite requirement

All cable ferrites are required to suppress radiated EMI emissions and must not be removed.

Electrostatic Discharge (ESD)

Attention: ESD damage can occur when there is a difference in charge between the part, the product, and the service person. No damage will occur if the service person and the part being installed are at the same charge level.

ESD Damage Prevention

Anytime a service action involves physical contact with logic cards, modules, back-panel pins, or other ESD sensitive (ESDS) parts, the service person must be connected to an ESD common ground point on the product through the ESD wrist strap and cord.

The ESD ground clip can be attached to any frame ground, ground braid, green wire ground, or the round ground prong on the AC power plug. Coax or connector outside shells can also be used.

Handling Removed Cards

Logic cards removed from a product should be placed in ESD protective containers. No other object should be allowed inside the ESD container with the logic card. Attach tags or reports that must accompany the card to the outside of the container.

Product Recycling and disposal

This unit must be recycled or discarded according to applicable local and national regulations. IBM encourages owners of information technology (IT) equipment to responsibly recycle their equipment when it is no longer needed. IBM offers a variety of product return programs and services in several countries to assist equipment owners in recycling their IT products. Information on IBM product recycling offerings can be found on IBM's Internet site at http://www.ibm.com/ibm/environment/products/prp.shtml.

Español:
Esta unidad debe reciclarse o desecharse de acuerdo con lo establecido en la normativa nacional o local aplicable. IBM recomienda a los propietarios de equipos de tecnología de la información (TI) que reciclen responsablemente sus equipos cuando éstos ya no les sean útiles. IBM dispone de una serie de programas y servicios de devolución de productos en varios países, a fín de ayudar a los propietarios de equipos a reciclar sus productos de TI. Se puede encontrar información sobre las ofertas de reciclado de productos de IBM en el sitio web de IBM http://www.ibm.com/ibm/environment/products/prp.shtml.

Notice: This mark applies only to countries within the European Union (EU) and Norway.

Appliances are labeled in accordance with European Directive 2002/96/EC concerning waste electrical and electronic equipment (WEEE). The Directive determines the framework for the return and recycling of used appliances as applicable throughout the European Union. This label is applied to various products to indicate that the product is not to be thrown away, but rather reclaimed upon end of life per this Directive.

Remarque : Cette marque s'applique uniquement aux pays de l'Union Européenne et à la Norvège. L'etiquette du système respecte la Directive européenne 2002/96/EC en matière de Déchets des Equipements Electriques et Electroniques

(DEEE), qui détermine les dispositions de retour et de recyclage applicables aux systèmes utilisés à travers l'Union européenne. Conformément à la directive, ladite étiquette précise que le produit sur lequel elle est apposée ne doit pas être jeté mais être récupéré en fin de vie.

注意: このマークは EU 諸国およびノルウェーにおいてのみ適用されます。

この機器には、EU 諸国に対する廃電気電子機器指令 2002/96/EC(WEEE) のラベルが貼られています。この指令は、EU 諸国に適用する使用済み機器の回収とリサイクルの骨子を定めています。このラベルは、使用済みになった時に指令に従って適正な処理をする必要があることを知らせるために種々の製品に貼られています。

In accordance with the European WEEE Directive, electrical and electronic equipment (EEE) is to be collected separately and to be reused, recycled, or recovered at end of life. Users of EEE with the WEEE marking per Annex IV of the WEEE Directive, as shown above, must not dispose of end of life EEE as unsorted municipal waste, but use the collection framework available to customers for the return, recycling, and recovery of WEEE. Customer participation is important to minimize any potential effects of EEE on the environment and human health due to the potential presence of hazardous substances in EEE. For proper collection and treatment, contact your local IBM representative.

Disposal of IT products should be in accordance with local ordinances and regulations.

Battery return program

This product may contain sealed lead acid, nickel cadmium, nickel metal hydride, lithium, or lithium ion battery. Consult your user manual or service manual for specific battery information. The battery must be recycled or disposed of properly. Recycling facilities may not be available in your area. For information on disposal of batteries outside the United States, go to http://www.ibm.com/ibm/environment/products/batteryrecycle.shtml or contact your local waste disposal facility.

In the United States, IBM has established a return process for reuse, recycling, or proper disposal of used IBM sealed lead acid, nickel cadmium, nickel metal hydride, and other battery packs from IBM equipment. For information on proper disposal of these batteries, contact IBM at 1-800-426-4333. Please have the IBM part number listed on the battery available prior to your call.

For Taiwan:

Please recycle batteries.

For the European Union:

Notice: This mark applies only to countries within the European Union (EU)

Batteries or packaging for batteries are labeled in accordance with European Directive 2006/66/EC concerning batteries and accumulators and waste batteries and accumulators. The Directive determines the framework for the return and recycling of used batteries and accumulators as applicable throughout the European Union. This label is applied to various batteries to indicate that the battery is not to be thrown away, but rather reclaimed upon end of life per this Directive.

Les batteries ou emballages pour batteries sont étiquetés conformément aux directives européennes 2006/66/EC, norme relative aux batteries et accumulateurs en usage et aux batteries et accumulateurs usés. Les directives déterminent la marche à suivre en vigueur dans l'Union Européenne pour le retour et le recyclage des batteries et accumulateurs usés. Cette étiquette est appliquée sur diverses batteries pour indiquer que la batterie ne doit pas être mise au rebut mais plutôt récupérée en fin de cycle de vie selon cette norme.

バッテリーあるいはバッテリー用のパッケージには、EU 諸国に対する廃電気電子機器指令 2006/66/EC のラベルが貼られています。この指令は、バッテリーと蓄電池、および廃棄バッテリーと蓄電池に関するものです。この指令は、使用済みバッテリーと蓄電池の回収とリサイクルの骨子を定めているもので、EU 諸国にわたって適用されます。このラベルは、使用済みになったときに指令に従って適正な処理をする必要があることを知らせるために種々のバッテリーに貼られています。

In accordance with the European Directive 2006/66/EC, batteries and accumulators are labeled to indicate that they are to be collected separately and recycled at end of life. The label on the battery may also include a chemical symbol for the metal concerned in the battery (Pb for lead, Hg for mercury and Cd for cadmium). Users of batteries and accumulators must not dispose of batteries and accumulators as unsorted municipal waste, but use the collection framework available to customers for the return, recycling and treatment of batteries and accumulators. Customer participation is important to minimize any potential effects of batteries and accumulators on the environment and human health due to the potential presence of hazardous substances. For proper collection and treatment, contact your local IBM representative.

This notice is provided in accordance with Royal Decree 106/2008 of Spain: The retail price of batteries, accumulators and power cells includes the cost of the environmental management of their waste.

For California:

Perchlorate material – special handling may apply

Refer to http://www.dtsc.ca.gov/hazardouswaste/perchlorate.

The foregoing notice is provided in accordance with *California Code of Regulations Title 22, Division 4.5, Chapter 33: Best Management Practices for Perchlorate Materials*. This product/part includes a lithium manganese dioxide battery which contains a perchlorate substance.

Flat panel displays

The fluorescent lamp in the liquid crystal display contains mercury. Dispose of it as required by local ordinances and regulations.

Monitors and workstations

Connecticut - Please see the web site of the Department of Environmental Protection at http://www.ct.gov/dep for information about recycling covered electronic devices in the State of Connecticut, or telephone the Connecticut Department of Environmental Protection at 1-860-424-3000.

Oregon - For information regarding recycling covered electronic devices in the state of Oregon, go to the Oregon Department of Environmental Quality site at http://www.deq.state.or.us/lq/electronics.htm.

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